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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
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08/814,082 03/10/97 TAKAHASHI

M 684.2465

EXAMINER

MMC2/0523

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ART UNIT

PAPER NUMBER

2871

DATE MAILED:

05/23/00

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

Office Action Summary

Application No.
08/814,082

Applicant(s)
Takahashi et al.

Examiner
Julie-Huyen L. Ngo

Group Art Unit
2871

- ☐ Responsive to communication(s) filed on _____.
- ☐ This action is **FINAL**.
- ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

A shortened statutory period for response to this action is set to expire 3 month(s), or thirty days, whichever is longer, from the mailing date of this communication. Failure to respond within the period for response will cause the application to become abandoned. (35 U.S.C. § 133). Extensions of time may be obtained under the provisions of 37 CFR 1.136(a).

Disposition of Claims

- ☒ Claim(s) 1-29 is/are pending in the application.
- Of the above, claim(s) 5, 8, 9, 12, 16, and 20-29 is/are withdrawn from consideration.
- ☐ Claim(s) _____ is/are allowed.
- ☒ Claim(s) 1-4, 6, 7, 10, 11, 13-15, and 17-19 is/are rejected.
- ☐ Claim(s) _____ is/are objected to.
- ☐ Claims _____ are subject to restriction or election requirement.

Application Papers

- ☐ See the attached Notice of Draftsperson's Patent Drawing Review, PTO-948.
- ☒ The drawing(s) filed on Mar 10, 1997 is/are objected to by the Examiner.
- ☐ The proposed drawing correction, filed on _____ is ☐ approved ☐ disapproved.
- ☒ The specification is objected to by the Examiner.
- ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119

- ☒ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).
- ☒ All ☐ Some* ☐ None of the CERTIFIED copies of the priority documents have been
- ☒ received.
- ☐ received in Application No. (Series Code/Serial Number) _____.
- ☐ received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

*Certified copies not received: _____

- ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

Attachment(s)

- ☒ Notice of References Cited, PTO-892
- ☒ Information Disclosure Statement(s), PTO-1449, Paper No(s). 8
- ☐ Interview Summary, PTO-413
- ☐ Notice of Draftsperson's Patent Drawing Review, PTO-948
- ☐ Notice of Informal Patent Application, PTO-152

— SEE OFFICE ACTION ON THE FOLLOWING PAGES —

DETAILED ACTION

Applicant's election without traverse, in Paper No. 11, filed March 8, 2000, Species I (figures 1-4), directed to the first embodiment is acknowledged.

Applicant identified claims 1-4, 6, 7, 10-15, 17, 18 and 20 as reading on the elected species.

However, the Examiner found that claims 12 and 20 do not read on the elected species, whereas, claim 19 is dependent on claim 13.

Therefore, claims 5, 8, 9, 12, 16 and 20-29 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b) as being drawn to a non-elected species. Claims 1-4, 6, 7, 10-15 and 17-19 are considered on their merits as reading on the elected species.

Drawings

The drawings are objected to because of the following reasons:

Figures 12-14 should be designated by a legend such as --Prior Art--. See MPEP § 608.02(g). ✓

There is no reference sign designated for the element on the left and on top of the conductors 17 next to the aperture 23 in figure 5. ✓

There is no reference sign designated for the elements which appear to be the sealing agent for the driver IC (5p), the gold bump (15) and the projection electrodes (13) in figure 13. ✓

Applicant is required to submit a proposed drawing correction in response to this Office Action. Any proposal by the applicant for amendment of the drawings to cure defects must consist of two parts:

- a) A *separate* letter to the Draftsman in accordance with MPEP § 608.02(r); and
- b) A print or pen-and-ink sketch showing changes in *red ink* in accordance with MPEP § 608.02(v).

IMPORTANT NOTE: The filing of new formal drawings to correct the noted defect may be deferred until the application is allowed by the examiner, but the print or pen-and-ink sketch with proposed corrections shown in red ink is required in response to this Office Action, and *may not be deferred*.

Appropriate correction is required.

Specification

The disclosure is objected to because of the following informalities:

The reference sign "4" has been used to designate different parts on page 14, line 13 and on page 15, line 7;

Appropriate correction is required.

amended (a) ***Claim Objections***

Claims 2 and ~~11~~ are objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim.

Claims 2 and ~~11~~ fail to further limit the subject matter of the previous claim since they are purely functional in scope and, as such, fail to structurally limit the claim(s) from which they depend.

Applicant is advised that when two claims in an application are duplicates or else are so close in content that they both cover the same thing, despite a slight difference in wording, it is proper after allowing one claim to object to the other as being a substantial duplicate of the allowed claim. See MPEP § 706.03(k).

Therefore, should claims 1-4, 6 and 7 be found allowable; claims 10, 11, 13-15, 17 and 18 will be objected to under 37 CFR 1.75 as being substantial duplicates thereof.

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 13 and 19 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

The recitation "pixel electrodes extending to form the electrode terminal," in lines 3 and 4 of claim 13 was not described in the specification nor disclosed in any drawings.

The recitation in claim 19 was not described in the specification nor disclosed in any drawings. It appears from the drawings that the second electrodes 15 of the semiconductor device 5 is directly connected to the first ends of the conductors 17.

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1-4, 2-4, 6, 7, 11, 13-15, 17-19 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The term "the first ends," in line 9 of claims 1, in line 3 of claim 7, in line 8 of claim 10, in lines 20&21 of claim 13, and in line 3&4 of claim 18, lacks antecedent. ✓

The terms "the second ends" in line 2 of claims 6 and 17, lacks antecedent.

The recitations: "the second electrodes" and "the first electrodes," in claims 14 and 15 respectively, lack antecedent. It appears that claims 14 and 15 are depended from claim 13, ✓
whereas, the input electrodes and output electrodes are recited and which seem to be the second and first electrodes. Therefore, the Examiner interprets that they are to be the same electrodes and will treat them as such during the examination of the application. Also, the preamble of claim 14 should be consistent with the preamble of claim 13 which from which it depends.

Claims 2-4, 6, 7, 11, 14-15 and 17-19 are rejected as bearing the defect(s) of the claim(s) from which they depend.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-3, 7, 10, 11, 13 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over applicant's admitted prior art.

As to claims 1, 2, 10, 11 and 13, applicant's admitted prior art discloses in figure 13 a display apparatus having a connection structure comprising:

- a substrate 1bp having electrode terminals 12p formed thereon;
- a semiconductor device 5p having first/output electrodes and second/input electrodes with the first electrodes connected to the electrode terminal 12p;
- a flexible wiring member 4ap having thereon a pattern of conductors each extending from a first end and second end on the flexible wiring member with the first ends of the conductors connected to the second electrodes of the semiconductor device 5p; and
- a circuit board 3p connected to the second ends of the semiconductors 5p on the flexible wiring member 4ap.

Although the circuit board 3p in the applicant's admitted prior art device does not include the electrode terminals connected to the second ends of the conductors, it is well known in the art for a circuit board to have electrode terminals formed thereon in order to make an electrical contact between the circuit board and the flexible wiring member or any other connecting board.

As to claims 3 and 14, it is well known and conventional in the art to have the electrode terminals of different panels/boards, e.g., a flexible tape carrier package (FTC) and driver IC or Printed Circuit Board (PCB), connect to each other by tape-automated bonding method. (also disclosed by applicant on page 1 line 25). Therefore, it would have been obvious for the electrode terminals of the semiconductor device 5p connected to the first ends of conductors 17 on a flexible wiring member 4ap by tape-automated bonding method.

As to claims 7 and 18, the connecting part between the second electrodes of the semiconductor device 5p and the first ends of the conductors on the flexible wiring member 4ap is sealed with a resin.

Claims 6, 17 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over applicant's admitted prior art, as applied above, in view of Hirai (5,311,341).

As to claims 6 and 17, it is well known in the art to have the electrode terminals connected to each other with an anisotropic conductive adhesive, as taught by Hirai (figure 1b and col. 4, lines 63-69). Hirai teaches that it is easy to replace or disconnect a defected TAB 4 from the liquid crystal panel by having the electrode terminals on the TAB 4 connected to electrode terminals 2 of the liquid crystal display panel by means of the anisotropic conductive adhesive 9.

Therefore, it would have been obvious for one of ordinary skill in the art to have the second ends of the conductors 17 on the flexible wiring member 4ap connecting to the electrode terminals on the circuit board 3p by means of an anisotropic conductive adhesive in the device of applicant's admitted prior art, as taught by Hirai.

Furthermore, as to claim 19, it would have been obvious for one of ordinary skill in the art to have the second electrodes 15 of the semiconductor device 5p connecting to the first ends of the conductors 17 on the flexible wiring member 4ap with an anisotropic conductive adhesive in the applicant's admitted prior art device, as taught by Hirai.

Claims 4 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over applicant's admitted prior art in view of Hirai, as applied above, and further in view of Kikuchi Mayayoshi (JP07321152 in IDS Paper No. 8).

Applicant admitted's prior art device (figure 13) includes all the limitations of claims 4 and 15 except for a connection of the first electrodes of the semiconductor device 5p and the electrode terminals 12p on the first substrate of the liquid crystal panel solely with an anisotropic conductive adhesive.

Mayayoshi discloses a device (figure 18) having the electrode terminals 3 of the semiconductor device 1 connect to the electrode terminals 23 of the liquid crystal substrate 12 via an anisotropic conductive adhesive 14. Also it is well known in the art to have electrode terminals of two different panels/boards connecting with each other solely by an anisotropic conductive adhesive for easy replacement or detachment of a defected panels/boards, as taught by Hirai.

Therefore, it would have been obvious for one of ordinary skill in the art to have the first electrodes of the semiconductor device 5p connecting to the electrode terminals 12p on the liquid

crystal substrate 1bp solely by an anisotropic conductive adhesive, as taught by Hirai and Mayayoshi, for easy replacement of a defective panels/boards.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure:

Hayashi et al. (4,767,189) disclose a terminal connection structure for a LCD device by means of solder 13.

Tanoi et al. (5,161,009) disclose a IC module having a folding junction structure.

Yoshioka (5,212,576) discloses an insulating material with coefficient linear expansion matching that of the one substrate over connection between two conductive patterns.

Harai (5,375,003) discloses a connection structure between a TAB film and a liquid crystal panel.

Kawaguchi et al. (5,528,403) disclose a flat type panel display device having flexible wiring and common wiring boards bonded to the display panel.

Nakanishi (5,726,726) discloses a semiconductive device having input connection terminals connected to a metal wiring included in a flexible printed circuit board.

Oh et al, (6,061,246) disclose a microelectric package including flexible extension and liquid crystal display modules using the same.

Kadowaki et al. (6025,893) disclose a liquid crystal display device having terminals on different substrates connect with each other by means of a known wire bonding method (fig. 1B col. 6).

Contact Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Julie Ngo whose telephone number is (703) 305-3508.

Any inquiry of a general nature or relating to the status of this application should be directed to the Group receptionist whose telephone number is (703) 308-0956.

Serial Number: 08/814,082
Art Unit: 2871

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Papers related to this application may be submitted to Art Unit 2871 by facsimile transmission. The faxing of such papers must conform with the notice published in the Official Gazette, 1096 OG 30 (November 15, 1989). The Art Unit 2871 fax numbers are (703) 308-7722/7724.

JLN
May 16, 2000

William L. Sikes
William L. Sikes
Supervisory Patent Examiner
Group 2871